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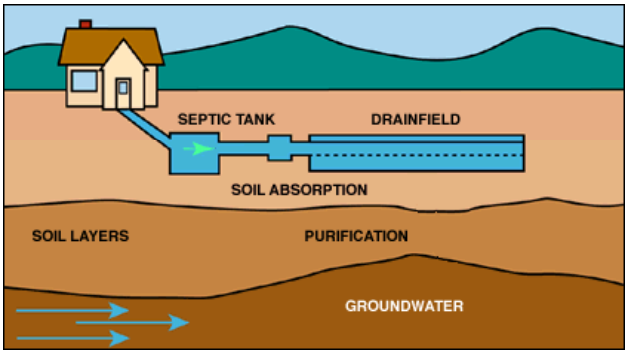
How Septic Systems Work

How does my septic system work?
Design & Function - Septic Tanks - Septic Tank Cross Section - Cesspool - Drainfield



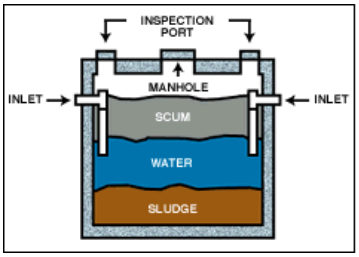
DESIGN AND FUNCTION

To work properly, a septic system should be designed and sized correctly for the household or business it serves. The absorption area should be installed in a location where soil type will allow the proper rate of drainage.

SEPTIC TANKS

Septic Tanks should have at least 250 gallons of capacity for each person in the house. Standard sizes are 750, 1000, 1200, and 1500 gallons. They can be constructed of precast concrete, plastic or fiberglass. Older tanks may be made of steel, which often corrode over time, or they may be built in place of block construction. Larger tanks are often divided into two chambers to improve solids separation. Manholes and inspection ports are located in the cover for service and inspections.

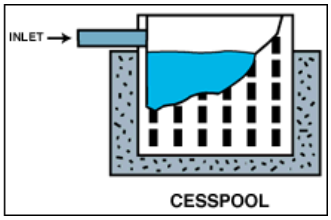
SEPTIC TANK CROSS SECTION



Both the inlet and outlet are located near the top of the tank, so the tank will fill to capacity before anything exits to the drainage area. Effluent slows on entering the tank, allowing lighter solids to float and heavier solids to sink, providing good separation from the water phase. A baffle or a "T" section pipe is also part of the inlet, to direct solids towards the bottom of the tank. On the outlet side they prevent solids from escaping to the drainage area. Only relatively clear water, which contains small amounts of suspended or dissolved organics should leave the tank and enter the drainage area. **A tank which is too small, overfilled with solids or receives a high volume of water in a short period of time will allow solids to pass through and contaminate the drain field.**

CESSPOOL

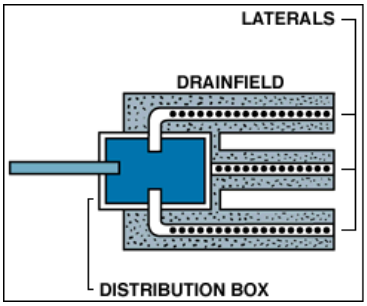
A cesspool incorporates both functions of a septic system in one structure. It consists of a large perforated tank in which digestion takes place, surrounded by an absorption bed where suspended and dissolved solids undergo final digestion and water is filtered. Cesspools are not as efficient as other systems, more prone to failure, and difficult to restore to operation.



Inside the tank, bacteria will reproduce in the floating scum mat and bottom sludge layer. By a process called anaerobic (without oxygen) digestion. Most solid matter will be converted to water, sewer gas and a small volume of indigestible sludge which must eventually be pumped

out. The rate and degree of liquefaction is determined by various factors. Included are: temperature, pH, bacterial efficiency, water usage, amount and types of waste and amounts of household cleaners, bleach, drain openers, and detergents added to the system.

DRAINFIELD



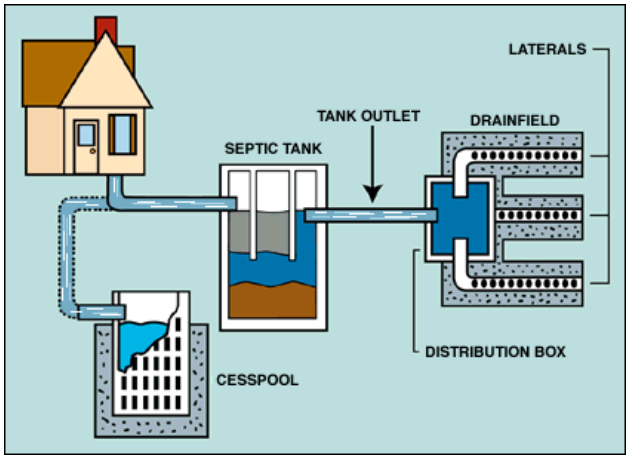
Drainage Areas may be in the form of a large perforated vessel called a seepage or leach tank, a single perforated pipe (lateral) or a number of laterals extending from a distribution box (D-Box) or boxes. Variations include pressure fed systems and systems using chambers in place of laterals.

In each case the perforated portions are surrounded by a gravel bed. The large surface area within the bed supports a population of microbes which will aerobically (using oxygen) digest most of the remaining organics in the waste stream. Air is supplied by natural diffusion down through the soil to the gravel bed. For this reason, a drainage area should never be paved over, compacted or covered.

A bio-mat of microorganisms forms a filtering layer at the soil/gravel edge and removes other contaminants including viruses as the water passes through and into the soil. Excessive amounts of organics escaping from the septic tank can result in a bio-mat growing so thick it will actually prevent adequate water flow into the soil.

SEPTIC CARE

How do I care for my Septic System?



MAINTENANCE AND PROTECTION

To properly care for your septic system and protect it from damage, it is important to know where it is located. Annual inspections should be performed and the system should be pumped when necessary.

Do you see puddles or soggy ground in the area of the drainfield?
Is there a rotten egg odor in your yard?
Do all the drains in your house back up, gurgle or drain slowly?
If you have had the septic tank pumped and the conditions return in a week or less, then your septic system is probably not draining properly and the field will have to be serviced.

SEPTIC PUMPING

Septic Pumping is necessary to prevent back-ups and contamination of the drainage areas. The chart below can be used as a guide for pumping intervals. Using microbiological supplements can help the system operate cleaner for longer periods between servicing. Using garbage disposals or flushing indigestible waste into the system will increase pumping frequency.

Tank Size Gallons	Number of People in Household					
	1	2	3	4	5	6
	Years Between Pumping					
750	9	4	2.5	1.5	1	-
1000	12.5	6	4	2.5	1.5	1
1250	15.5	7.5	4.5	3.5	2.5	2
1500	19	9	6	4	3	2.5

Preventive Maintenance

Preventive Maintenance
Annual Inspection - Precautions and Suggestions - Prevention and Treatment

Proper maintenance of your septic system
is important for efficient and long,
trouble free operation. Improper maintenance
will lead to system failure, unsanitary conditions
and expensive repairs and replacement.

Home septic systems and cesspools are often ignored or thought of as merely a hole in the ground for waste and dirty water. In reality, they are living, breathing, microbiological factories responsible for digesting organic waste. This waste is converted into water, which is filtered and purified before reentering potable ground water reserves, gases, and small amounts of undigested seepage. This remaining material will eventually build up to a point where removal will be required. Without these living processes, septic systems would fill to capacity in a short amount of time. These simple yet effective onsite waste water treatment systems are used by over 30 million households and many businesses throughout the United States.

Proper maintenance of your septic system is important for efficient and long, trouble free operation. Improper maintenance will lead to system failure, unsanitary conditions and expensive repairs or replacement. One common misconception is, if there is not a problem, no service is required. In fact, many septic additives are sold on this basis, making claims to eliminate pumping. Although not pumping a system at recommended intervals won't lead to immediate failure, excessive amounts of organics from a full septic tank will flow out and clog the drainage area.

ANNUAL INSPECTIONS

- Surfacing of septic water, soggy soil or septic odors indicating that gray water is not being absorbed by the soil.
- Trees or bushes growing where their roots may create clogs or pipe damage.
- Soil compaction over the drainfield possibly caused by vehicles.
- Inside the tank, check for broken or missing baffles and repair if needed.
- Measure the sludge depth and scum mat thickness in the tank to estimate when pumping will be needed.
- Excess sludge in the D-Box means the tank needs to be pumped, baffles are broken or water usage is excessive.
- A flooded D-Box indicates the field is not draining and needs cleaning, repair or root removal.
- WARNING: Never enter an empty tank or lean into one without proper equipment or ventilation. Gases present may be toxic or cause suffocation.

PRECAUTIONS AND SUGGESTIONS

- Establish a system maintenance schedule.
- Don't flush difficult to digest grease, excess food or garbage into the system.
- Don't put non-biodegradables such as paint, petroleum products, cat litter, paper towels/napkins or disinfectants down the drain.
- Limit the use of chlorine bleach or switch to an oxygen bleach alternative. (Usually color safe types)
- Fix any leaky plumbing fixtures and spread laundry loads over the week to avoid drain field saturation.
- Use corrosive drain openers minimally. Use mild build-up preventatives instead.

PREVENTION AND TREATMENT

- The key to maintaining a healthy and trouble free septic system is proper preventive maintenance.
- Pump septic tank or cesspool at recommended intervals.
- Use an activator immediately after pumping to restore bacterial populations.
- Restore malfunctioning drain fields, cesspools, leach tanks or dry wells with a porosity restorer.
- Use a septic maintainer to improve septic tank function, digest grease, paper, detergents, protect drainage areas and control odors.

"We've got to take care of our customers." That's been the Hercules creed since 1915 when founder Sam Wander opened our doors.

Contact us by phone, e-mail, fax or good ole US mail.

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Stay in touch, and we'll do the same.